

Vol. book 4 New Jersey Division - Archean Division

Jan. 1891

Field notes of Aug. T. Foerste Fall 1891.

to accompany map with localities.

Examination of Cambrian along W. border of Archean Highlands  
from Hamburg to S. of Andover N.J.

U. S. GEOLOGICAL SURVEY

9-896



Aug. J. Foerste

Field notes on the Cambrian  
sandstones & limestones of the  
Western border of the New Jersey  
Highlands and within the  
Archean mass.

(See accompanying portion of 'Central  
Highlands & Plateau' sheets  
nos 30, 31, 32 on which the numbers  
of observations are marked.

Sept. October November 1891.

Note Book No. 4.

Discoveries of fossils pp. 5, 7, 9, 15, 17, 29, 31, 37  
43, 55, 103, 115, 139, 171 (2).

Summary by A. T. Foerste pp. 1-4.

The Archaean is a complex of  
crystalline and igneous  
much folded and sheared, the  
combined result being a gen-  
eral N.E. strike and S.E. dip  
of the shearing planes, often  
evident after stratification.

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This complex contains a  
broadout limestone, whether  
one or more beds is un-  
known. This limestone is  
commonly more a hornblen-  
dite, more or less pyroxenitic,  
garnetiferous, magnetic, etc.,  
as the result of metamorphism.

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The limestone is probably  
not at the top of the Archaean  
series, but forms a large bed  
in the same, and has en-  
folded all the foldings of the  
other Archaean strata.

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At certain localities the Archæan strata stratigraphically above the Archæan limestone have been removed during the period of base level erosion antecedent to Cambrian times; from the Archæan limestones to such an extent that the latter appeared exposed over large areas. One of these areas, the largest was that about Franklin Furnace. Another lay south of Sparta Junction. A third lay east of a line running almost N + S through Andover. A fourth lay along the Blendon Mine hill, south of Andover.

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On the base levelled Archæan was deposited everywhere in the area under consideration the Cambrian sandstone, usually fossiliferous.

Next, the Magnesian limestone of Rogers, Cook & C.

Then the Devonian limestone.  
Then the Hudson River slate &c.  
These are always present in all undisturbed sections.

After the general folding which involved all paleozoic strata took place, it must still have been possible to readily make out the succession of deep cuts existed, since the folding was remarkably simple.

After the folding a series of faults took place in the so-called White limestone area, of the Vernon Valley, from Franklin Furnace northward &c, &c. The failure to recognize these faults, was the chief cause for much of the faulty stratigraphical work done here.



At certain localities the Ar-  
chaean is ~~not~~ <sup>to be</sup> mistaken.

The failure to distinguish be-  
tween true Archaean limestone,  
usually very coarse grained, but  
showing variations in grain—  
and the Cambrian limestone,  
often brecciated at the fault line  
and then moderately metamorphosed  
—has been another stumbling block.

One failure to recognize the Ar-  
chaean gneisses as something  
distinct from Archaean true  
granites, and calling everything  
granite has been another mis-  
take. This mistake was not so  
much petrographic, as structural  
since the "granite" was falsely  
supposed to have metamorphosed  
the Archaean limestone, under  
the supposition that this lime-  
stone was Cambrian. This made  
the granite to post Cambrian.  
This is wrong. It is pre-Cambrian.

Plane-table sheet-32

1. Woods of *Pinus strobus* and *Pinus rigida* of the  
White Mountains. Some of the most common  
trees in the region and some of the most  
common insects: — *Scalithus linearis*,  
*Alnus Thymus* etc.  
Sinker Magazine 1908 E. 11, 55

Sheet-32

2. NE of west of San Juan River,  
and west of South west River.  
Now in formable contact of Arch. area  
with Cambrian sandstone.  
Strike N. 45° E. dip 55° W.  
Fossils abundant. *Strophomena*  
*Hypothyris americana?*  
*Leptæna*



Sheet 32.

- 2 Almost NW of P. near the P. road  
deposit. On east side of hill at  
its southern extremity, thin bedded  
sandstone with conglomerate  
L. in. thickness N 55 E dip 65 N.  
Fossils. *Strophomena Thompsoni*.

Sheet 32.

4 At Cross Roads, West of Frankton  
Front. The same dip as much  
as before. There is the same ge-  
ographical relation the Archæon  
and the Cambrian strata here,  
but the fossiliferous Cambrian  
strata were here eroded out,  
and are now covered up. The de-  
position here creates the same  
horizon.



Sheet 32.

5 West of Franklin Furnace, Only  
the Archean is shown here. None of  
the Cambrian strata are exposed.

Sheet 32

6. Between Monroe Canyon and  
Ashtaburgh, North, on line.  
Unconformity between Ordovician  
and Cambrian sandstone. The  
exposure is in sand around a  
small clump of trees but within  
the long line of woods covering  
the hill and a small line of  
trees farther west, where there is quite  
a steep descent into the valley.  
Strike Magnetic N 52 E, dip 60-70 W.  
Fossils, *Chonetes Thompsoni*.

*Strophomena*

*Hypothyrid* common?



170

Sept 32.

7. The north east of the hill  
where the road meets  
the highway between Archard  
and Tangle. A road runs along  
a slight ridge south of the road  
with the few timber between the  
road and the hill, and a  
wooded locality on the east.  
The road runs N 50° E. dip 10°.  
Tangle. A large quantity of  
timber in the road and  
the hill to the west.

North side of the locality is good strata  
the road runs N 50° E. dip 50° W.



Sheet 32.31

8. About 200 yds of the center house  
about 100 yds west, east of  
Sand Point.

Unconformity between the  
and Cambrian. The contact  
is now not shown. The stream  
east will be filled. The stream  
occupies the place of the river for  
a long time. Cambrian is not shown.  
The shales are relatively thin. The  
non-entire part of the river  
shown for about 100 yds.

All the rocks are N20 E dip 40 W.  
No fossils.

Sheet 27.31

9. *Perceps* *del.* *supra* of the *Enclava*,  
belongs a little further up hill.  
2nd. of *supra* is a *del.* *supra*  
1st. *del.* *supra*



- 10 The exposures from 9 to 10 are all of Archean rocks. The Cambrian is shown but the exposures of Archean are so much in line and they seem as well to carry on the strike shown by the contacts further north. The exposures are so much the same as exposures in that same place. The borders of the Archean farther west can be seen and I hope to be enabled to admit that the line of contact is really a repeated thing there than the line of contact between the Archean and the Cambrian is a distinct one.

Sheet-32.



Sheet 32

12. Archdeacon's response to the  
of the Society of the Holy Spirit  
in the Holy Spirit  
the Lord

Sheet 32





Stat 32.

15 South west of a river, 200 feet  
top of Zoroaster's Palace. 500 feet  
distance from the river, the other  
distance from the river, the other  
distance from the river, the other  
distance from the river, the other



Sheet 32.

- 16 North east of same place.  
Doubtless light blue limestone  
beds as in fig. 17. 18. 19. 20.



Shall - L



Sheet-32:

16. *Anthracosia bipunctata* on the same  
place between the fork of the river,  
a little above the mouth of the  
Cape Fear River. It is a small  
fly but a large part of the  
body is black. The abdomen is  
black, yellowish, and very  
long. The wings are very  
long and narrow.

Sheet 32.

18. Just as we left the shore, the wind  
blew with a force and direction in  
favor of us, so that we were able to  
reach the island of the great harbor in  
less than an hour. The harbor was  
very deep and the water was very  
calm. We found a good anchorage  
place and a good place to land.  
The island was very fertile and  
the people were very friendly.

Sheet 32



21 *Exposure of Arabian Limestone*  
*in the hills with the*  
*Arabian Limestone*

Sheet 22.

Sheet 52.

Compare Warren Geol. Surv. N. J. 1890 p. 44  
Makes double out. S. S. with Wh. d. between &  
overlying on summit. Makes S. end of hill  
composed of quartzite in place (supposed to be)

Sheet ~~82~~ 2.

23. At the bridge south of the Blenden Mine, south of Andover.

The Cambrian sandstone might be to lie on the east side of the little knoll along the road just S. E. of the bridge, near the little stream. However neither Archaean nor Cambrian is shown here. I did not try to find Cambrian farther south since I thought this station 23 was far enough S. to prove the Archaean nature of the crystalline basement at the Blenden Mine.



Sheet 2.

At the chestnut tree by the road-  
side, outside of the fence, N. of  
the Indian Mine.

From above the limestone,  
which runs into a sandstone in  
the west, the sandstone is rep-  
resented by the Cambrian. In the  
area were found. The Archæon is  
30 paces toward the N.E. The valley  
contains the contact.

Strike Magnetite  $N 30 E$  dip  $65 W$ .  
This strike continues northward  
as far as the road, covering a space  
near the road, S.W. of the mine. It  
is a contact N. of the Indian Mine.  
This is indicated by the <sup>rock</sup> valley west  
of the Indian Mine.

From the Mine to the bank were  
found on the north, enclosing the  
field, the strike changes to more easterly  
Strike  $N 50 E$ . Magnetite. On the  
side of the line of Archæon  
and the.

Sheet 2.

25. Half way between the first and second  
parts of the Clinton River and ten  
mile further north. — Also  
half way between the second and  
third Buckner Road.

Out crop of a fine grained sand-  
stone and thin bedded sand-  
stone? and more sandy of the

coarse, sandy layers in it. Rep-  
resenting the base of the Buckner  
series — the Clinton.

Strike Magnetic N 55 E. Dip. 72 E.

The weight is to be laid on the change  
of dip to the E. only.

— 0 steps on the E. side the nearest the  
creek outcrop.

Half way along the west field on the  
north is more sandstone, especially  
sandy on the east. The dip is more toward  
the E along the lower part of the hill but be-  
comes <sup>vertical</sup> vertical at the top. Dip down and  
indicates a dip. The distance is 20' or E.  
Strike Magnetic N 55 E. Dip is more  
vertical in the lower layers.

Sheet 2.

26 Opposite E. of the main road of  
Blackmore Pond.

The following is a description of  
the structure indicated by the case of  
vertical exposure. Some of the  
other Cambrian sandstone, which  
therefore considered as not of  
this age. It is further indicated  
that the structure remains a line up to  
the point. This is further indicated  
by the fact that the structure  
does not dip but runs so  
towards the east. The line of strike  
indicated by this structure of other  
strike direction N.E. S. of E. of S. S.  
This would make a continuation  
of the strike structure from the  
west side of the little mound  
towards the north, and would thus  
be a line of contact. In the  
case of the mound, a face of the  
mound is visible. In  
the same direction of strike  
structure is enough to determine  
the structure of the line to the north.



27 East of middle of Buckhorn Pond.  
Sheet 2 On E side of a brook.  
Strike Magnetic N 71 E, dip 70 E.  
It will be observed that in this  
case again we have a devia-  
tion from the first exposure to  
strike, but that the continuation  
of the present strike will again  
bring the next exposure on the  
north, nearly in line, as is  
at the base of the brook by following  
a stream some time. The rock  
is a coarse grained quartzite, grey-  
ish on the west, blue like  
limestone on top of the hill, and  
a sandy shale on the E. side of  
the brook. It may be seen  
that both exposures are not in-  
finitely in the same position  
of view, but as such as at Fort  
St. Louis, even before the  
war. Some of the ore is scattered  
in the brook, and all was  
covered up in the lower valley  
of the brook. After this was not-

then I found on the N. side of  
this hill a line of limestone, sit-  
ting on a outcrop and evidently  
lying E. of the shale. Somewhere  
very well known underlain the  
limestone therefore is at all places  
etc. Further north the shale was to  
be seen in the old road bed which  
would also place the limestone just  
mentioned E. of the shale. Above  
over the west outcrop which is all  
limestone evidently above the E. of  
the shale.

28 East of the north end of the Buchanan &  
Great Pond. Along a good earth road  
2. leading along a stone wall di-  
rectly E. over the hill and through  
the pasture land.

Plenty of shaly ~~or~~ rather sandy  
limestone. From this point south-  
wards the limestone extends for  
some distance but I failed to  
take strike and dip.

Sheet 78

29. North end of Backhouse Brook.  
directly E of Chestnut Hill  
in an open grassy field  
exposure of limestone here, and that  
by a small distance N. of the contact  
line, but not far. Strike  
Strike Magnetic N 40-45 E. Dip 50 W.  
About 40-45 paces on the E. ought  
to mark the contact line between  
the Michener and the Cambrian  
judging by the topographical  
location of the hill side. As  
a matter of fact I found a Cam-  
brian sandstone outcrop in the  
west field however, the north, which  
stratigraphically lies E of the afore-  
mentioned limestone about 50 paces.  
It has a  
Strike Magnetic of N 47 E and an  
inclination dip, apparently 70 E. An  
other feature again.



Sheet 48

30 S. E. of the bend in the road on a  
several hundred yards north of the  
corner, along the base of the hill  
side are numerous con-  
cretion nodules exposed with  
brown pits, rising to N. W.

Strike Magnetic N 65 E dip. 60 W.

From this point northward the  
topography indicates that the con-  
tact line between the Cheltenham and  
the Ironbridge lies just north of the  
ridge or steep grade underlying the  
west side of the hill, and so far as  
is known by H.

Sheet 8

- 31 Just east of the bend of the road  
slightly more eastward, going north.  
At this point the contact between  
the Silurian and Cambrian may be  
seen, judging by the strike at 30,  
and the topography and then  
the exposure whatever occurs.

Sheet 8

- 32 Just east of the bend of the road <sup>road</sup>  
towards the north, going north.  
On a narrow ridge similar to the last  
the topography would bring the con-  
tact between the Eschschia and  
the Cambrian just east of the road.  
No exposure whatever seen.

Sheet 8

33. Up the hill pretty near the top, N.E. of the last locality is a good outcrop of the *Archean*. Several isolated outcrops may be found about 150 yds. farther north but farther down the west slope of the hill. These patches of outcrop extend well down the hill as far as 39. Not a sign of *Cambrian* was seen here.



St. 8.

34. Outcrop at the very base  
of the hill, on the west side,  
and into a sign of Cambrian.

Sheet 8.

35. In order to make the Cambrian fall in line with the next actual exposure at locality 38, it is necessary that the contact line between the Archæozoic should pass west of the road after leaving locality 31. It is possible therefore that the low indication of a ridge, just west of the road, departing from it at a very small angle, is a present topographical feature representing this contact exposure whatever.

36. In continuation of the previous  
Sheet. Copied used for locality 35.  
8 the contact line between the Canyon  
brown and the Dickinson is right  
to the west of the road line  
here, along an undulating  
very poorly indicated ridge.  
No exposures whatever.

37 In continuation of the methods  
employed for the last two local  
8 sites, the contact line between  
the Cambrian and the Archæan  
might be seen here just east of  
the beginning of the incline,  
along the street, passing west  
from the R. R. depot. No ex-  
posed rock.



38 On the west side of the road bra, where  
the road begins to rise again, Between  
a house on the west side of the road  
and a little shed on the right side  
is an outcrop, almost concealed  
by the road dirt.

Strike magnetic N 2 to 25 E dip 80 N.  
It will be noticed that the strike  
and dip correspond much better  
to a continuation of the contact  
line between the Archæan and  
the Cambrian from locality 32  
to a point just west of the Taylor  
or mine; then to a bend of the  
contact line along the road in  
ward color as suggested by the  
published geological map of the  
state.

The exposures here are chiefly black-  
ish shale, with a little massive  
limestone on the east, but in doubt  
today. The Cambrian limestone  
is mostly of limestone is west of the ex-  
posure on the R.R. track. The contact  
line lies therefore east of here.

39 On the north side of a little hill  
St. 8 almost directly east of a house on  
a good sized knoll a small hill  
and almost directly east of 38.  
Here there is Buchanan limestone.  
Now the contact line must  
pass between localities 38 and  
39. And since the creek valley  
just east of 38 would best con-  
tinue the line of strike suggested  
by 35, 36, and 37 the contact is  
located here. The hill range east  
of creek valley for some distance  
north would therefore rest on  
Buchanan rock, although there  
are no exposures in the course to  
indicate this.

From hill  
to creek valley  
on 38

40 Orchaean gneiss west of Orchaean  
Shale limestone, at west end of hill.  
& The contact here must lie quite  
a distance west. No Cambrian  
exposures.

71. Archean gneiss at west end of  
hill. No Cambrian. The con-  
tact line runs west from about in  
the middle or at the west side of  
the group mapped west of here.



42 Archae are given at point end  
of hill. The contact line west  
from ranch near the road on  
the west.

- 43 Archean gneiss follows the road on the east side as far north as the next road on the right leading south to Andover. Referring to the Geological Survey published by the Massachusetts Survey it will be noticed that I place the contact line very much more toward the west than they do in the region about Andover. And I do this mainly on the basis of the exposure exposed 38. This is only a small exposure, but every thing about it seems to indicate that it is in place. Moreover the strike. Magnetic for 38 is  $N 22-25 E$  and the rock strike for the ought to be about  $N 14-17 E$ . And it is surprising, after a line on the this direction is drawn east of 38 through the creek bed, how near the localities 32, 33, 34, 35 fall in line with this strike. And how only a slight easting north of 38 would make it pass just west of 43. (over)

I suppose this section does not actually take place here until the point is reached, west of 40, where three creeks or four, all meet, to form one. An existing road at this point, to a point just west of the most northern Anderson mine would meet the facts as at present understood very closely.

Sheet 8.

44 From the forks in the road north -  
ward to this locality the contact  
must run west of the road, since  
the Archean borders the road on the  
west as far as Cambrian is dis-  
able



45 At this end of the road is plenty of  
Archaeon gneiss but no Crin-  
oid. The contact must run  
west of the road.

Sheet 8

46 There is plenty of *Archaeon griseus* all  
along the road here, on the east side  
of the road.

Sheet 8.

47 From the last locality to this, the  
Archaeogirens form good outcrops  
keeping about parallel with the road,  
on its east side, slightly diverging  
from the same at 47.

Sheet 8.

48 Plenty of a calcareous very much  
broken shale, with sandy layers  
below. ~~SESE~~

Strike magnetic.  $\approx 23^\circ E$  Dip  $45^\circ N$ .  
The Contact between the Arkansan  
and the Cambrian is therefore  
between 42 and 44.

Sheet 8.



49 A somewhat slaty shale.

Strike Magnetic N33E dip 40 W.

According to this the contact is  
turning more easterly here.

Sheet 8

50. This bend in the road is north of the  
exposure. The bend is located too  
far east on the map. It should be  
quite close to the railroad, and  
about N.N.E. from 49.

Strike Magnetic N 70 E. dip 40 W.  
This indicates that the strike is be-  
coming still more easterly, so as  
to meet the exposure east of Cliff Island.  
The rock is limestone underlain by  
a sort of crumbling shale.

51 Contact between Archaean and  
Algonkian Cambrian sandstone  
on south side of the road leading  
past the south end of Cliff's Pond  
and about 150 yds east of the fork  
of the road.

Strike Magnetic N. 50° E.

Dip 33 N.

Sandstone at the contact. The crinoid  
fossils calcareous shale further west, and  
still farther west are limestone beds.

Fossils. *Algonkian* *Chomps*.

It is evident that unless some un-  
expected beds like these, the con-  
tact line between the Archaean and  
the Cambrian must have about as  
indicated by the red pencil mark  
from locality 50 to locality 51. At  
any rate it can hardly have very far  
up the hillside judging from the  
strata at 50 and 51. Since this is  
hardly likely to be debatable ground  
and since it has no doubt been  
mapped by Mr. Tarr, I did not  
take the trouble to examine it.

52 On the left side of the bench is a  
chain with Cambrian strata  
towards the left. It strikes N 35 E.  
dip 40 W. From this point along  
the road is with some exposure  
of Richard can exposures but the  
Contact line cannot be seen  
norably to the West.



Shul. 8

53 / KM end of hill  
/

Like Magast-2 / 53 E. dip 50%

51

109

Sheet 21

55 Plenty of Archean exposures here  
but the contact line must run  
just east of Bluffs and Howells Bend.  
From this point southward are plenty  
of Archean exposures along the  
east side of the road. No Com-  
bination was noticed although care-  
ful search was not made.

56 Contact line west of the road. The  
sheet 11 Cambrian limestone appears on  
the west side of the hill, and covers  
the steep slope of the foot of the hill  
here. Archean granite occurs  
further west towards the west of the  
hill. Cambrian limestone rises  
the road on the east, and the  
granite outcrops on the hill. The  
contact line is that of 57. 24  
west.

Archean can be seen west of  
Cambrian.



57 Contact on the west side of the road  
bed. Continuum - and one under  
the rail fence and also farther  
Sk. 21 westward, with a limestone layer  
between. On the east side of the road is  
a thin layer of limestone. It is  
found in the same place.  
It will be noticed that the  
road is on the west side of the  
contact line and is not  
on the east side.

58. Contact line west of fence. on west  
side of road. Out of road is Beacon  
limestone. West of road is Richardson  
limestone towards S. E. and  
exposed. Richardson passes to  
the N. W. and West. The Cambrian  
sandstone and limestone is  
further West.

Stone Quarry is N. E. of 58.  
It will be seen that the strike  
carries the contact line west  
of 58. The west north Beacon  
limestone outcrop.

59 Arkham limestone. south east  
sh<sup>2</sup> of the name are Arkham fossils  
not proper. Possibly the identifica-  
tion in the topography towards  
the east of a line connecting  
59 and 60 was formerly to a  
greater or less extent limestone  
which has since been removed  
away. In proof of this I saw  
evidence that north of the so-called  
Arkham line east of Sussex  
Hills I saw plenty of limestone  
extending northward along  
the whole line, and also  
up into the ~~mountain~~ <sup>hills</sup>. This has  
better be looked up and  
being accepted as true.

60 Plenty of exposures of Archæan series  
on West side of the road in a good  
sized long ridge. No Cambrian  
seen <sup>in situ</sup> although fragments  
supposed to be of Cambrian origin  
some rather frequent in some  
places in the soil. Hence south-  
wards the outcrops are as indi-  
cated on the map, all being  
Archæan.

Sheet 21.

Sept 21

61 Archaean exposures. No Cambrian. The exposures as far as 62 are delineated on the map.



62 Archean gneisses. Exposed north-  
wards not crushed down but ex-  
tending from 10 at present in-  
tervals to 9. No Cambrian being  
exposed the entire length.

63 From 61 to 63 no exposures were  
Sh. 2<sup>1</sup> found although the contact  
line probably lies constantly some  
hundred yards east of the rail-  
road and of Lane's Pond. Out-  
crop 63 is a very good exposure of Rich-  
mond. No Cornubian. Its posi-  
tion on the map is not very exact-  
ly located although it will be easily  
found with the map as a pos-  
itive guide. There are no outcrops  
between 63 and 64.

64  
ch. 21 Anchaon gueras Outcrops are  
frequent from this point as far  
north as the rail road. No Cambrian or other rock was anywhere  
found in contact with the ~~same~~.  
In my opinion the line from  
64 north east is a fault line.  
The Cambrian of 8 extends south  
wards perhaps until some place  
near 61 but in deference to Messrs.  
Hepburn & I mark it as indicated  
by the blue pencil line.

(cf. R. S. Tan Note Book 19 New Jersey  
p. 49.

65 Archæan gneisses, with contacts,  
shel<sup>21</sup> at base of hill probably repre-  
sented contact line with  
Cambrian, see next locality.

66. Archæan in the bluff side on the  
sh. l. side. A valley <sup>Cambridge</sup> ~~is~~ <sup>cut</sup> ~~by~~ <sup>into</sup>  
with sandstone layers on the east  
on the west side of this valley.  
Strike Magnetic N. 23 E. Dip 40 W.  
It is evident that the strike error  
becomes worse eastward going north  
as the exposures of the Archæan  
would suggest. These exposures  
continue north-eastward to  
R.R. as the red line shows.  
Strike and Dip from Mendocino.



67 Archæan gneisses. Contact line  
between Archæan and Cambrian  
in the west. Fault line along  
the brook and swampy meadow  
between the two hills.

68 Plenty of exposures here of lime-  
stone. Some of these exposures <sup>belong</sup>  
well up the hill. All having a  
general NE strike and a westerly  
dip. I think they continue to dip  
in this direction up to the foot of  
the next hill where the fault  
brings up the Larchmont gneiss  
again.

Shut  
32

69 Sheet 50.

69 North side of Harbor on the  
R.P. cut. On the shore back on the  
beach. A small stream flows  
from the shore on the west  
side of the harbor. For  
24 feet from the shore  
the stream flows  
from the shore. It is 30 ft. long  
and 10 ft. wide. It is a small  
stream. It is a small stream.  
It is a small stream. It is a small  
stream. It is a small stream.



11 June 39 to 71. The glacial  
mass from this direction  
along the top of the hill  
to SE as usual. A fault  
across the hill at the top  
line, separating the upper  
part of the hill from the lower  
stone. The upper part is  
composed of a single  
mass of rock of a different  
kind. The surface is  
at 69 feet above sea level  
and is a single mass of  
stone. The surface is  
at 69 feet above sea level  
and is a single mass of  
stone.



72 Cambrian limestone, almost a  
sandstone. (As I have not shown  
Sheet 30 here. From here to 76 these Cam-  
brian rocks have a general dip  
by the same strike and dip.  
and the rock more fossiliferous  
than along the strike.

Sept 30

73 The Archean is shown below  
the Cambrian sandstone which  
is abundant.

74. Plenty of Archaean rock, <sup>east</sup>  
shut by granite.  
50

75 More Cambrian sandstone,  
shale with shaly interbeds on top  
of mill. The contact with the  
Chalcan lies in the valley toward  
the east.

76 From 72, above 73, along 75 to  
sk<sup>100</sup> 76 are the Cambrian sand-  
stones in range. These could  
be followed further out there  
was no time. It is to be noted  
that the Cambrian sand-  
stones are becoming thicker  
toward the north, and cover  
quite important areas along  
the coast. The sandstone is  
placed in with the limestone  
the limestone is in the  
concrete layer. The sandstone  
is very a good deal of it  
just by the side of the limestone.



72. From 73, through 74, to 77  
St. 50 are Archean exposure which  
could be followed further west-  
wards. A valley lies just west  
of the same, representing the  
contact between the Archean  
and the Cambrian, still to  
the west. At 77 the Archean  
is disrupted.

78 From 72 at foot of the hill and  
eastward is believed to extend  
Sh. 20 another fault line, its course  
was not traced at all. Judg-  
ing from Harris' description  
it should run across the top  
of hill 622 just east of the top.

Sketch No.

of. Mason. Ed. Jan. 11. 1890 p. 40 & 41

79. Not located on any map is the  
above said hill 622, just east  
of the Ape. The contact be-  
tween the Archean and the  
Cambrian limestones runs  
across the top of the hill in a N.E.  
direction. The Cambrian sand-  
stone here seems to be a fault.  
It is ~~weathered~~ <sup>rather</sup> ~~br~~ <sup>very</sup> sand-  
stone, with the lime weathered  
out, and iron infiltrated.  
At top of the hill I thought the  
so called sandstone might  
be a fine grained gneiss or  
rock on course by examination.  
The contact between Cambrian  
and Archean is brecciated  
as it should be, along the con-  
tact line on top of the hill  
which is a fault. The actual  
unbrecciated contact line  
in the valley towards the west  
is not exposed.

80 Not located on the map is quite  
a distance N. E. of Mc Afee,  
and N.E. of aforementioned hill 622,  
on the E. side of the road, pretty  
well up, among a group of  
hills surrounded by open fields.  
One strike from here was pretty  
taken from actual exposures  
partly from a breaking in hill  
622, east side.

Strike magnetic N 65 E dip 25 N.  
Mainly sandstone and plenty  
of etc. It will be noted that  
this line of strike when corrected  
for the variation would mean  
the <sup>not faulted</sup> contact line along the valley  
west of hill 622 to a point west  
of the Simpson on Virginia ~~will~~ sand  
stone exposures, and then to the  
crinoid ~~stone~~ exposures of Section  
VII, VIII, IX. (Nason's Map N. J. Report 1895)



81 South of Simpson's Mine South

Sheet  
30

of the life. Here towards top-  
pen part of hill, on the south  
west side of the woods are Cambrian  
slaty shale exposures  
not exactly typical Cambrian  
but yet known to replace the  
Cambrian basal conditions  
more or less in many places  
strike Magnetic, N. 28 E. D. 60 W.  
At top of hill towards the S. E.  
is a regular quartzite, which  
together with similar rock at  
22, and 83 I am inclined to  
consider "sandstone dyke" and  
not true Cambrian sedimentary.  
There are no exposures of Archean  
limestone between these expo-  
sures and the R.R. as indi-  
cated on the map.



82 Half way between Mc Afie  
and Hardistonville.

Sheet  
30  
Plenty more of the Luty shale  
replacing the Cambrian sand-  
stone. The Archæan lies East  
of the same.

Strike Magnetic N 40 E D 14 20 W.  
Quite a long exposure.

Sp. naevii cum. Sep. 1890 p 43-44. J. V. Wolff - notes July 22 1891. 1461 007-58.  
Sheet 32

83

Andersen limestone on the east. A "concretion dyke" cutting the concretion along the east side of the brook in a direction almost strictly parallel with the brook: N 80 E.

The strike of the true Cambrian however is strike magnetic N 30 E S. of 25 N. In my estimation the quartzite of the concretionary dyke and the Cambrian sandstone proper are totally distinct things. Fossils. See the limestone. Very common *Clonella Thompsoni*.

I recall again the quartzite as probably a "concretionary dyke" I have to believe in its Cambrian sedimentary origin.

Ch. Mason. Dec 1896 p. 45 & 46 Sec. XIV

little point, but the general evi-  
dence here is that of a cut off  
by a fault on the north at least.



Roseville locality  
Scolithes bimeans  
Scolithes ~~h~~

Sheet no. 8. 100-200 yards S.W. of Wright's pond.

Lockwood locality  
Scolithes

Sheet no. 2.













